~~Addendum~~
General Dynamics Corporation Shipyard
McMyler Crane (Structure 33S)
97 East Howard Street
Quincy/~~Braintree~~
Norfolk County
Massachusetts

HAER No. MA-26-G

HAER
MASS
11-QUI,
10G-

PHOTOGRAPHS

WRITTEN HISTORICAL AND DESCRIPTIVE DATA

HISTORIC AMERICAN ENGINEERING RECORD
MID-ATLANTIC REGION, NATIONAL PARK SERVICE
DEPARTMENT OF THE INTERIOR
PHILADELPHIA, PENNSYLVANIA 19106

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MASS
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HISTORIC AMERICAN ENGINEERING RECORD

~~Addendum to~~

GENERAL DYNAMICS CORPORATION SHIPYARD

McMyler Crane (Structure 33S)

HAER NO. MA-26-G

Location: 97 East Howard Street at Fore River, Quincy~~/Braintree~~, MA. Bounded by East Howard Street (west), Quincy Avenue (south), Weymouth Fore River (east), South Street, Washington Street, and Fore River Bridge (north). Property lies in the cities of Quincy and Braintree, Norfolk County, Massachusetts.

USGS Weymouth, MA Quadrangle, Universal Transverse Mercator Coordinates: 19.337430.4678330

Fabricator: McMyler Interstate Co., Cleveland, Ohio (later, Industrial Brownhoist Corporation)

Date of Construction: (1916), erected at shipyard 1929

Present Owner: Massachusetts Water Resources Authority
Charlestown Navy Yard
100 First Avenue
Boston, Massachusetts 02129

Present Use: Vacant

Significance: The McMyler Hammerhead Crane of 1916; 1929 is among the oldest and is the largest of the Quincy-Fore River Shipyard's outfitting cranes. It is significant as an excellent example of an extensively used type of shipbuilding crane. Its installation reflects a period of yard improvements following World War I, and it continued to be used for over 50 years.

Project Information:

This documentation was undertaken in June/July 1989 by the Massachusetts Water Resources Authority (MWRA) in accordance with a Memorandum of Agreement. Portions of the Shipyard will serve as a staging area and shipping point during construction of sewage treatment facilities on Deer Island in Boston Harbor and for other water supply and waste-treatment related activities. The McMyler Crane is proposed for demolition.

Preparer:

Virginia A. Fitch
The Public Archaeology Laboratory, Inc.
387 Lonsdale Avenue
Pawtucket, RI 02860
(401) 728-8780

Description and Operation

The 120-ton McMyler Hammerhead Revolving Crane (Hammerhead) of the General Dynamics Corporation/Quincy-Fore Shipyard is located on Outfitting Pier 2 (see HAER No. MA-26-C) in the east-central waterfront area. The crane was originally erected in 1916 in the Harlan Yard, Wilmington, Delaware. It was dismantled and re-erected at its present location in 1929 by The Fore River Ship and Engine Company. A new bottom section was added increasing the height by 25 feet above the pier deck, and a reinforced concrete foundation was constructed. The crane's estimated weight is 639 tons.

The lower 1929 stage of the Hammerhead tower structure is 25 feet tall. it consists of four legs of box-lattice construction spaced 30 feet on center with corner-to-corner cross bracing. Above it is a steel plate platform with a corrugated steel tool house. The original portal base consists of four legs of box-lattice construction 4 feet, 8 inches wide at the base which curve inward towards the center of the tower. The legs are braced by a V-structure on the north and south sides. The base supports a massive steel plate platform on which the pintel bearing rests. From the center bearing the four main members of the pintel column angle outward and upward and then straight up to the main gearing platform. The tower column surrounds the pintel column. Both are of box-lattice construction with diagonal and horizontal bracing. The circular main pintel platform is constructed of wood planking on steel and extends beyond the tower column. In operation, the center turns with the pintel column; the perimeter remains stationary. The operator's cab, which is suspended from and turns with the crane boom, is entered at this level through four openings in the railing.

The operator's cab is constructed of steel plates with wood-frame sash windows. The windowed front wall of the cab angles out, allowing clear sight lines to the end of the boom, to both sides, and the ground below. It contains the main switches and operator controls manufactured by the General Electric Co. and the Electric Controller & Manufacturing Co. of Cleveland.

Above the main pintel platform, at the level of the bottom chord of the boom truss, is the machine house platform. It has a steel plate floor and is generally cruciform in plan. At the rear is the steel plate machine house with the enclosed counterweight below. The machine house is lit on two sides by wood-frame windows. It contains the three motors, transmissions, and drums for the main hoist, auxiliary trolley, and main trolley lines. The main hoist and trolley area each powered by a General Electric Type M.D.S. 87 H.P. 230 V. 500 R.P.M. motor, and the auxiliary trolley by a 15 H.P. 600 R.P.M. General Electric motor. The auxiliary hoist drum is located at the front of the pintel.

The main drive motor for rotating the pintel is located in a housing near the center of the machine house platform. A series of bevel gears and shafts extending to either side of the crane carries power out and down to the four sets of paired double flange wheels which ride on a circular track below the main pintel platform.

The boom is 110 feet long, constructed of steel truss, "C" beam chords and angular lacing. The main and auxiliary hoist trolleys travel on rails on the lower chord. The main trolley rides on four pairs of 24 inch diameter steel double flange wheels, and the auxiliary trolley on four individual 16 inch wheels.

Access up the crane is via a series of steel stairs and landings around the perimeter of the tower to the main pintel platform. A center stair leads from the pintel platform to a small intermediary platform. From there, a ladder rises to the machine house platform. A plank catwalk allows access out the center of the boom to its end.

In operation, the crane pintel and fixed boom is capable of rotating 360^{o} over the pier deck and water with a maximum radius of 60 feet. Its slewing speed with no load is 3 minutes 48 seconds. In lifting, wire ropes extend from the drums via a series of sheaves along the top of the boom to the main 120 ton and auxiliary 15 ton trolleys and hoisting hook mechanisms. With no load, the main trolley moves at a speed of 22 feet per minute and lifts at 8 feet per minute.

1989 Conditions

During its more than 50 year history at the Quincy-Fore shipyard, the McMyler Hammerhead Crane has been strengthened and repaired at various times, yet it remains today substantially in its original condition. In 1935, certain structural members on the boom were strengthened out to the 60 foot radius. The four tower legs were also reinforced in the 1930s. In 1966, a major upgrade included replacement and repair of lattice bars, handrails, and small horizontal braces at the 52-foot 6-inch elevation above ground level. A 1984 in-house evaluation found that the crane was in reasonably good condition for its age, although the auxiliary trolley was not operational. Nevertheless, use of the crane was discontinued.

Historical Significance

First erected at the Bethlehem Steel Company's Harlan Yard, Wilmington, Delaware in 1916, and relocated to Quincy in 1929, The McMyler Hammerhead Crane is among the three oldest large cranes remaining at the Quincy-Fore Shipyard. The earlier cranes are the Wellman-Seaver Gantry Crane (1901) and the XYZ Bridge Crane (1901; 1916; ca. 1958. See HAER No. MA-26-E). Outfitting Pier 2, on which the Hammerhead crane is located, had been constructed by the Fore River Ship and Engine Company as its primary outfitting area in about 1901. Bent's Creek to the north formed a natural basin and a small artificial basin was located on the pier's south side. The primary construction slips were located further south on the north side of Hayward's Creek.

At the time the Hammerhead was erected, the Quincy-Fore yard had distinguished itself in thirty years of shipbuilding. The 1920s was a period of slackening construction contracts after the boom of World War I. Bethlehem made major improvements to the shipyard at this time. These

improvements enlarged the yard's capacity with new facilities and its land area by filling in much of Bent's and Hayward's Creeks. A large percentage of the work in these years was repair, overhauling and re-outfitting of both naval and civilian vessels. These contracts were critical to the yard's economic survival and to maintaining the skills of its highly specialized work force. The Hammerhead crane permitted the hoisting of large ship deck structures such as housings, turrets, and smokestacks in one piece, thereby increasing the yard's ability to handle major overhauling and refurbishing work.

Over the succeeding nearly sixty years, the Hammerhead Crane remained the primary hoisting mechanism for the outfitting phase of ship construction and repair at the Quincy-Fore Yard. With its lifting rating of 120 tons, it's capacity was over three times that of any other pier crane. As the pace of construction stepped up, particularly in the 1940s during World War II, the ability to move a ship from the ways and basins to the outfitting piers as soon as the hull was sufficiently strong was critical to speedy delivery of the finished vessels.

The hammerhead crane was a common type used in shipbuilding during the early twentieth century for erection and fitting out. It possessed the high clearance and wide range of motion required for shipbuilding. The McMyler Hammerhead crane was of moderately large size within the scope of this type of crane (Wright 1922, p. 197).

Bibliography

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[Note: For archival and additional sources, see Addendum to General Dynamics Corporation Shipyard HAER No. MA-26.]

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